Claims

1. A polymer composition comprising glycolic acid (GA) as a co-polymer with at least one other bioresorbable monomer, or a functional derivative of said co-polymer, having a tensile strength of at least 1100MPa.

2. A polymer composition as claimed in claim 1, in which there are two bioresorbable monomers.

3. A polymer composition as claimed in either claim 1 or claim 2 in which at least one other bioresorbable monomer is polylactic acid (PLA).

4. A polymer composition as claimed in any preceding claim in which at least one other bioresorbable monomer is poly L-lactic acid (PLLA).

5. A polymer composition as claimed in any preceding claim in which the GA composition is at least 70% glycolic acid.

6. A polymer composition as claimed in claim 5 in which the GA composition is at least 75, 80, 85, 90 or 95% glycolic acid.

7. A polymer composition as claimed in claim 4 or 5 in which the polymer composition is around 95% glycolic acid.

8. A polymer composition as claimed in any one of claims 4 or 5 in which the polymer composition is around 98% glycolic acid.

9. An artefact comprising strengthened glycolic acid polymer composition as according to any one of claims 1 to 7.

10. A polymer composition as claimed in any preceding claim in which the fibres have a tensile modulus of at least 20GPA.

11. A polymer composition as claimed in any preceding claim in which the fibres have a tensile modulus of at least 21GPa.

12. A polymer composition as claimed in any preceding claim in which the fibres have a tensile modulus of at least 22GPa.

13. A process for the manufacture of a polymer composition as claimed in any one of the preceding claims which includes the steps of:

a) forming the polymer composition comprising glycolic acid as a copolymer with at least one other bioresorbable monomer, or a functional derivative thereof, into fibre;

b) quenching the fibres then;

c) subjecting the quenched fibres to a tension under conditions whereby a defined region of the tensioned fibres is drawn.

14. A process according to claim 13 in which the fibre forming method is melt extrusion or solution spinning.

15. A process according to claims 13 or 14 in which the quenched, tensioned fibres are subjected to zone-heating.

16. A process according to claims 13 to 15 in which the quenched, tensioned fibres are subjected to at least two separate drawing steps, each drawing step performed under identical or different conditions.

17. An artefact comprising a polymer composition, or a functional derivative thereof according to any one of claims 1 to 12 or

when produced by a process according to any one of claims 13 to 16.

18. An artefact of claim 17 comprising at least two polymer components.

19. An artefact of claim 18 comprising 10% to 80% by volume the polymer composition or a functional derivative thereof according to any one of claims 1 to 12 or when produced by a process according to any one of claims 13 to 16.

20. An artefact of any one of claims 17 to 19 in which at least one of the polymer components is bioresorbable.

21. An artefact of claim 20 in which the bioresorbable polymer comprises a poly-hydroxy acid, a poly-lactic acid, a poly-caprolactone, a poly-acetal or a poly-anhydride.

22. An artefact of any one of claims 17 to 21 comprising at least one non-bioresorbable polymer component.

23. An artefact of claim 22 in which the non-bioresorbable polymer comprises poly-propylene, poly-ethylene, poly-methyl methacrylate or expoxy resin.

24. An artefact of any one of claims 17 to 23 further containing at least one non-plymeric component.

25. An artefact of claim 25 in which the non-polymeric component comprises a ceramic, hydroxyapatite or tricalcium phosphate.

26. An artefact of claim 25 or 26 in which the non-plymeric component comprises a bioactive factor.

27. An artefact of claim 27 in which the bioactive component comprises a natural or engineered protein, a ribonucleic acid,

a deoxyribonucleic acid, a growth factor, a cytokine, an angiogenic factor or an antibody.

28. An artefact according to any one of claims 17 to 27 in which the artefact is in the form of a medical device.

29. An artefact of claim 28 in which the device is a suture, a scaffold for tissue engineering or implantation, an orthopaedics implant, a complex shaped device or a bone fixation device.

30. A process to manufacture an artefact according to any one of claims 17 to 29 comprising the steps of:

a) placing appropriate lengths of strengthened glycolic acid polymer composition as according to any one of claims 1 to 7, into moulds;

b) adding any other components (and mixing);

c) compression moulding to the desired shape.

31. A process to manufacture an artefact according to any one of claims 17 to 29 comprising the steps of

a) forming a polymeric component in the presence of strengthened glycolic acid polymer composition as according to any one of claims 1 to 7 and;

b) in situ curing of the monomers or other precursors to form said polymeric component and artefact.

32. A process for the manufacture of artefacts according to any one of the claims 17 to 29 which includes the step of: compression moulding other polymeric, non-polymeric or

blend of polymeric and non-polymeric components in the presence of said fibres.

33. A process of claim 30 or 31 in which includes the step of compression moulding other polymeric, non-polymeric or blend of polymeric and non-polymeric components in the presence of said fibres.

34. A process of claim 32 or 33 in which further includes the step of: forming a polymeric component in the presence of said fibres by in situ curing of monomers or other precursors for said polymeric component.

35. A process of claim 34 in which the monomer used does not liberate a by-product on polymerisation.

36. A process of claim 34 or 35 in which at least one of the monomers is a ring opening monomer that opens to form a poly hydroxyl acid.

37. A process of claim 36 in which at least one monomer is a lactide, a glycolide, a caprolactone, a carbonate or mixtures thereof.